

Truss Bridge Project

The North Carolina Department of Transportation (NCDOT) needs your help in designing a model truss bridge. The goal of this project is to investigate the tensile and compressive forces in structural members and observing the bridge during load.

Design Requirements

- Horizontal span: minimum 24 in / maximum 25 ½ in
- Width of bridge deck: 5 in
- Structural material: ⅝ in x 24 in balsa wood
- Joint attachment: wood glue

Testing Equipment

- Vernier Software
- Force Plate
- Testing block, sand, and bucket

Deliverables

- Truss Bridge
- Detailed design drawing showing dimensioned front, side, and top views
- Bridge report

Constraints

- The bridge must rest on two vertical supports, 1½ in x 5½ in on end
- The open spacing between the vertical supports is 23 ¾ in
- Height limit of 10in above and 1 ½ below support
- No more than two side by side structural members

Testing Procedure

- Bridge will be placed on test stand
- The testing block will be place inside the bridge
- A bucket will hang from the testing block where the sand will be added until the bridge breaks

Technical Report

The technical report is an individual assignment. Record everything you do for this project. Begin by looking at the **Engineering Design Process**. Refer to grading rubric to get a more visual list of the required items. The very first page should be a table of contents. Every day you are in class you should record everything you do in it. This includes, but not limited to, your research, brainstorming, sketches, and modifications. The research can be internet based and is put in place in order to get some good ideas on how to build your truss bridge. Cite at least three sources and include a summary of the key points. Once you have completed your truss bridge you will be required to write a conclusion section in your report. The conclusion needs to include a list of materials, design changes, observations and conclusions. Questions to address in your observations and conclusions include:

What problems did your bridge experience?

What went well with your bridge?

What could have been done to improve your bridge?

Make sure to also include important observations such as where the breaks occurred and why.

The final sketch should be done on graph paper or a Computer Aided Design (CAD) program. The technical report must include recorded data from testing.

Grading Rubric

Student Name: _____

Section	Requirement	Points Possible	Points Earned
Technical Report	Report Cover	5 Points	
	Cover Page	5 Points	
	Table of Contents	5 Points	
	Research Done	20 Points	
	Preliminary Designs	20 Points	
	Final Design	20 Points	
	Observations and Conclusions	20 Points	
	Report must be TYPED in 12-Point Font, Double Spaced	5 Points	
Truss Bridge	Bridge constructed with correct materials	20 Points	
	Bridge holds at LEAST 2 lbs	20 Points	
	Bridge holds the most load without collapsing	10 Points Extra Credit	
Total Points	Maximum points Technical Report: 100 Truss Bridge: 40	100/40	